

No. 708,746.

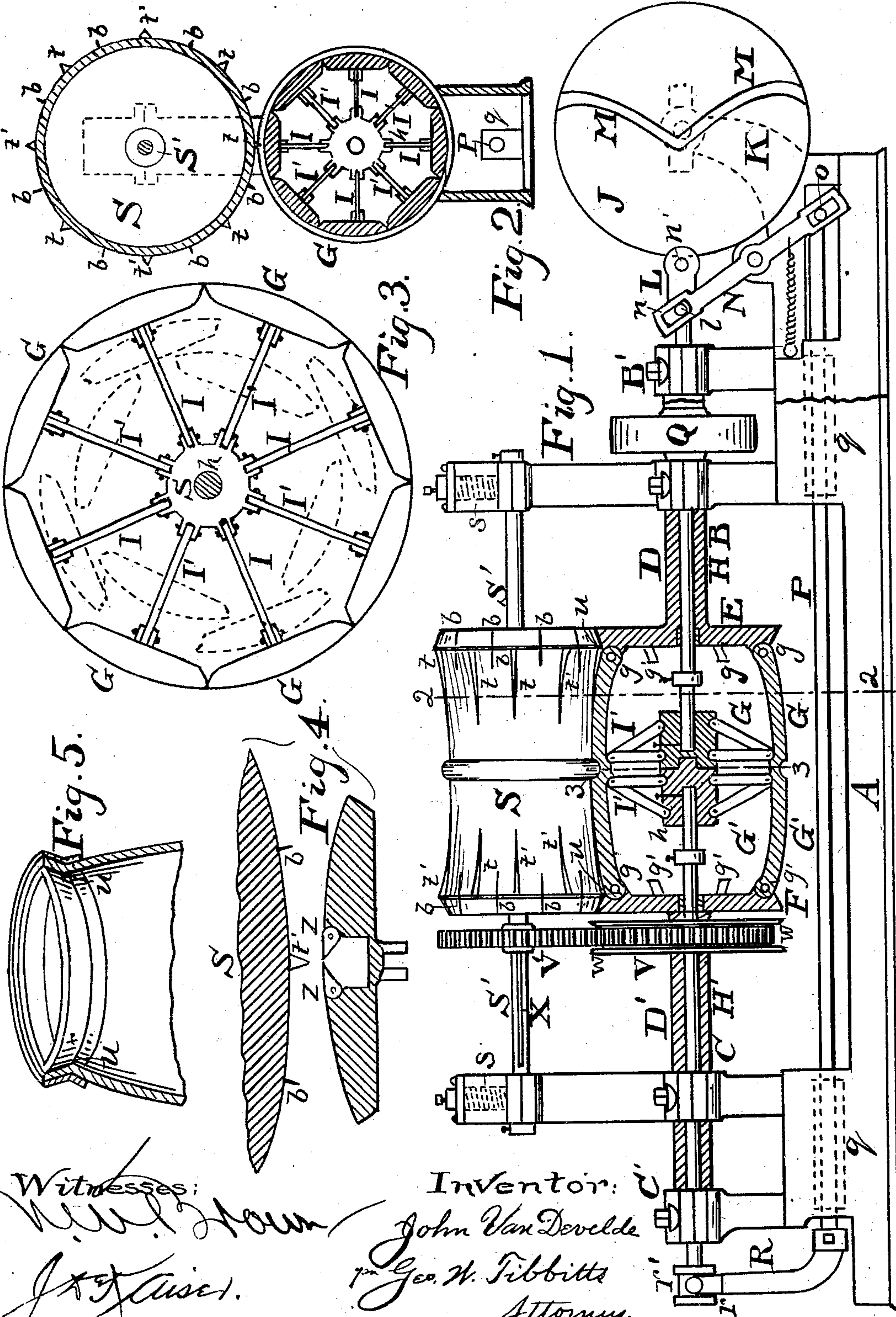
Patented Sept. 9, 1902.

J. VAN DEVELDE.  
BARREL MAKING MACHINERY.

Application filed Jan. 3, 1902.)

(No Model.)

2 Sheets—Sheet 1.



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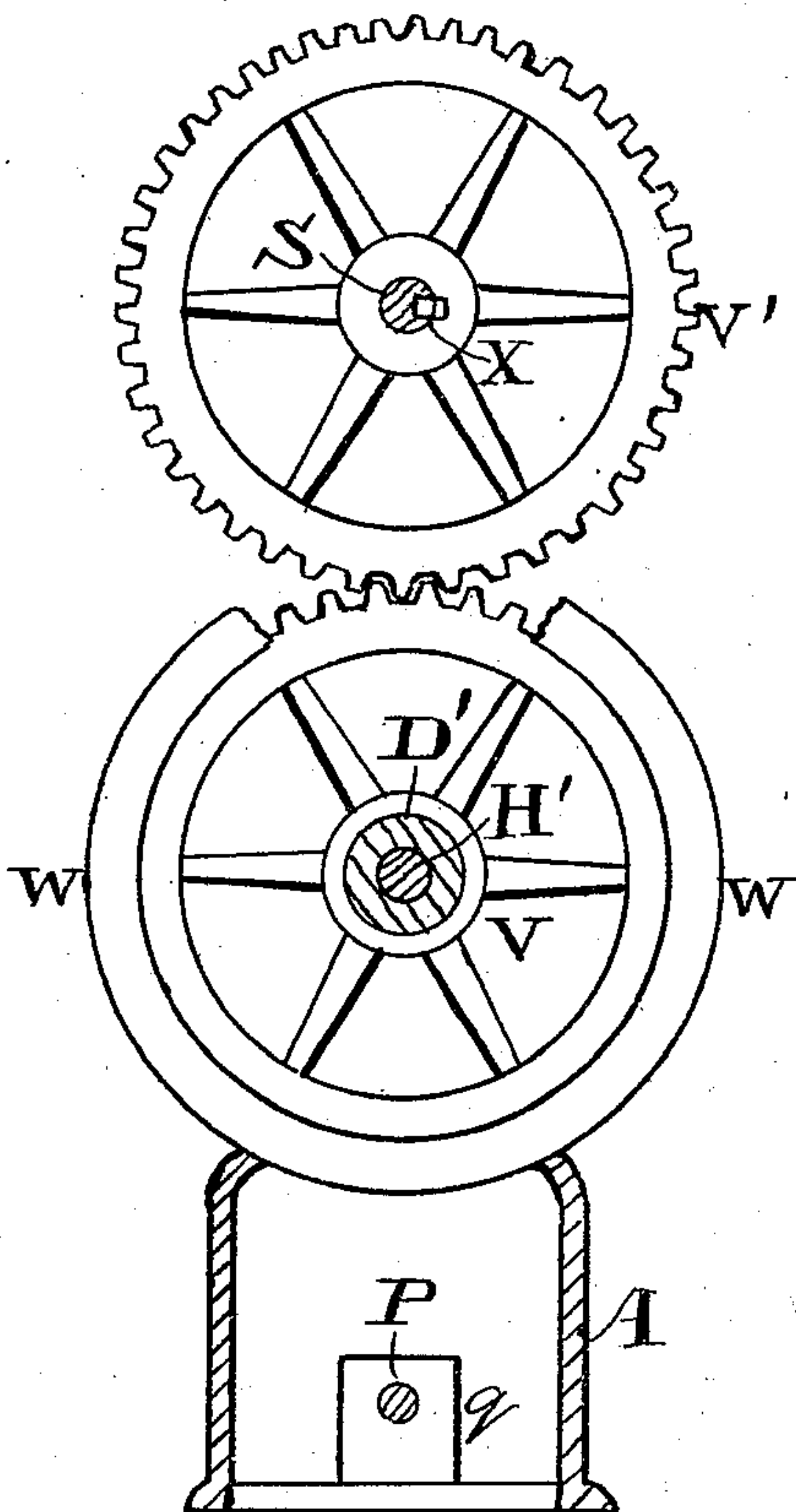


Fig. 7.

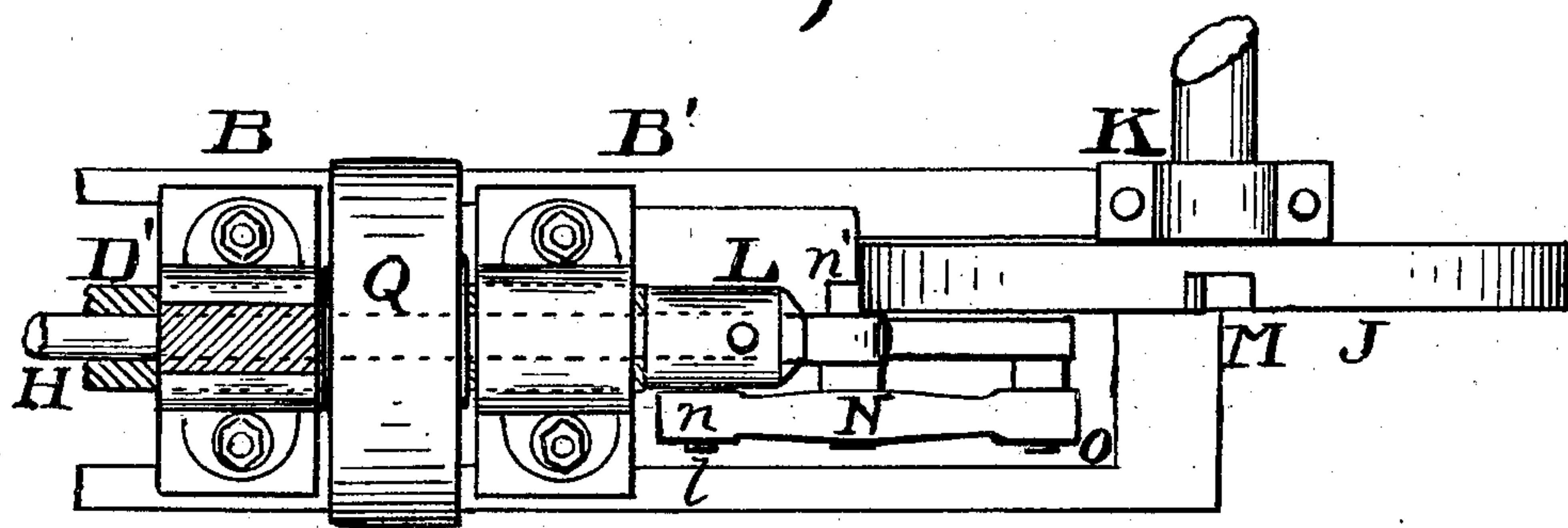


Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## BARREL-MAKING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 708,746, dated September 9, 1902.

Application filed January 3, 1902. Serial No. 88,273. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN VAN DEVELDE, a citizen of the United States of America, and a resident of Cleveland, Cuyahoga county, State of Ohio, have invented certain new and useful Improvements in Barrel-Making Machinery, of which the following is a specification.

This invention relates to barrel machinery, and has for its object the production of a machine for manufacturing paper barrels, the subjects of patents granted to me as follows: No. 614,218, November 15, 1898; No. 651,517, June 12, 1900; No. 651,906, June 19, 1900; and it consists in the new construction and combinations of the parts of mechanism for rapidly and uniformly producing such barrels, substantially as hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my said machine, showing the mandrel in longitudinal section and the mechanism for collapsing and withdrawing it after the barrel has been rolled upon it. Fig. 2 is a vertical section on line 2 2 on Fig. 1. Fig. 3 is a view of the mandrel on the separation-line 3 3 on Fig. 1, showing the position of the sections in dotted lines forming the body of the mandrel when collapsed in the operation of withdrawing it from the paper body for releasing and discharging the same. Fig. 4 is a sectional view of a part of one of the mandrel-sections and a part of the accompanying pressure-roller, showing the means for forming the crimps in the paper body. Fig. 5 is a sectional view of one end of the paper body, showing the method of inserting and securing the heads in said body. Fig. 6 is a plan view of the right-hand end of the machine, showing the "swiveled head on central shaft H" and the cam-wheel J, which operates in conjunction with it. Fig. 7 is a face view of the two gears V V', showing the annular flange on gear V.

A is a bed-plate having suitable posts, housings, and bearings for supporting the working parts of the machine.

B B' are the bearings which support the double shaft of the mandrel at one end of the machine, and C C' are the bearings that support the double shaft of the mandrel at the opposite end of the machine.

D is a tubular shaft on one end of the mandrel, and D' is also a tubular shaft on the opposite end of the mandrel. The said mandrel consists of two disks E and F, attached to said shafts D and D', respectively. These disks are upon which the chimes of the barrel-body are formed. The body of the mandrel consists of curved segmental sections G G', hinged at *g g'* to each of the said disks. These sections meet at the middle line or at the bilge or largest diameter of the mandrel, thus forming the surface upon which the paper is wound or rolled in making the barrel-body. The mandrel is made collapsible for withdrawing it from the barrel-body when formed, as follows:

H H' are central shafts supported inside of the tubular shafts D D'. They extend inward through the disks to the middle of the mandrel and carry on their inner ends the hubs *h h'*. To the said hubs are pivotally attached links I I', connecting them with the inner ends of the sections G G'. It will be seen that the links I' are connected to the hubs back on a diagonal line from the links I for the purpose of having every other section pulled inward farther than the others, as seen in dotted lines in Fig. 3, to enable their large moving ends to pass in by each other far enough to collapse sufficiently to withdraw the mandrel out through the small ends of the paper body. The central shafts H H' extend outward beyond the bearings at both ends of the machine and are made to slide outwardly within the tubular shafts D D' in the operations of collapsing the mandrel by means of a cam-wheel J, attached to the end of a counter-shaft having its bearing in a post K on the end of bed-plate A and deriving rotary motion from a suitable source. (Not shown.) To the end of shaft H is provided a swiveled head L, having a pin *l*, which as said cam-wheel revolves falls into the radial groove M in the side of the wheel. This operates to withdraw one half of the mandrel at one end of the machine. For withdrawing the opposite half of the mandrel a lever N is fulcrumed at its middle to the frame A, having slots *n o* in its ends. A pin *n'* on the head L of shaft H plays in the slot *n* to move said lever N simultaneously with the movement of the shaft H. The other end



of said lever is connected in like manner to the end of a sliding rod P, supported in boxes *q q* in the bed-plate A. R is an upright arm attached to the opposite end of said rod P and has a yoke *r* on its end connecting it with a grooved head *r'* on the end of shaft H'. It will be seen that as the lever N moves on its fulcrum the rod P is pushed and carries the shaft H' outwardly and that the opposite half of the mandrel is withdrawn coöperatively with its accompanying half.

S is a pressure-roller located above the mandrel supported on a shaft S', having its bearings in boxes in the upper part of the housings supporting the shafts of the mandrel. The roller S is made to conform to the configuration of the mandrel to press the layers of paper closely thereon. To make the paper cylinder conform to the barrel shape, the parts toward the ends are crimped to reduce the diameter and make the required taper from the bilge to the chimes. To produce these crimps, tapered holes or cavities *t* are made in the faces of the sections G G', as shown in Fig. 4, and on the roller S tapered and sharp blades or projections *t'* are provided for the purpose of forcing the paper into said cavities. The journals for the shaft of the pressure-roller S are under pressure of springs *s s* for the purpose of enabling the roller to adjust itself to the thickness of the barrel as it increases in thickness.

V is a gear fixed on the shaft D', and V' is a gear on the shaft S', meshing with said gear V, whereby the pressure-roller S receives rotations from the rotations of the mandrel. The gear V' is fixed on shaft S' with a feather sliding in a longitudinal groove *x* in said shaft, whereby said gear may be carried along with the half-mandrel D' when the same moves outwardly when in the operations of withdrawal. On the gear V, at each side of and embracing the teeth, are provided annular flanges *w w*. The teeth on gear V' extend in between these flanges and mesh with the teeth on gear V. The purpose of these flanges is to provide a means for moving the gear V' along on its shaft when the gear V is carried on its shaft in the operations of collapsing the mandrel, and thereby keep the connection of the two gears intact and preserve the position of the pressure-roller S with the mandrel.

Q is a driving-pulley on shaft D, deriving motion from any suitable source for operating the machine.

Y is a spring attached to frame A and the lever N for the purpose of aiding the pin *n'* to enter the groove M when it comes around. *z z* are tapered leaves hinged in the sides of the holes or cavities *t*, held up by springs. These leaves are for holding the paper from being pulled out again after it has been pushed in by the blades *t'*.

*u u* are annular grooves in the mandrel for forming the croze-beads for holding the heads

in the barrel, the heads having the croze-groove in their peripheries.

*b b* are cutting-blades on the roller S, designed for cutting slots in the chimes to enable the chimes to be spread sufficient to allow the heads to be inserted. Then when the hoops are put on said slots are closed.

The performance of this machine is as follows: The paper, taken from a reel or other suitable source, is wound on this mandrel to form the body of the barrel. Said layers after the first layer are to be pasted, glued, or gummed together by means of mechanism (not shown) working in conjunction with this shown and described. When a sufficient quantity has been wound on, an attachment (not shown) severs the paper, and then the mandrel is collapsed and withdrawn, releasing and discharging the barrel, as hereinbefore described. The mandrel is again returned and expanded ready for repeated operations.

Having described my invention, what I claim is—

1. A collapsible mandrel consisting of disks, tubular shafts attached to said disks, curved and tapered body-sections hinged to said disks, central shafts supported in said tubular shafts, hubs on said central shafts, links connecting the hubs with the sections, adapted to collapse and withdraw substantially as described.

2. A collapsible mandrel consisting of disks, tubular shafts attached to said disks, curved and tapered body-sections hinged to said disks, central shafts supported in said tubular shafts, holes or cavities in said sections, leaves hinged in said cavities, croze-grooves in the peripheries of the disks, hubs on the inner ends of the central shafts, links connecting the hubs with the sections, adapted to operate substantially as described.

3. A collapsible mandrel consisting of disks, tubular shafts attached to said disks, curved and tapered body-sections, hinged to said disks, holes or cavities in said sections, leaves hinged in said cavities, croze-grooves in the peripheries of the disks, central shafts supported in said tubular shafts, hubs on the inner ends of said central shafts, links connecting the hubs with the sections, in combination with a pressure-roller mounted on a shaft over said mandrel, blades on the roller adapted to mesh with the cavities in the mandrel, and cutting-blades on said roller, adapted to crimp and cut the paper on the mandrel, substantially as described.

4. A collapsible mandrel consisting of disks, tubular shafts attached to said disks, curved and tapered body-sections, hinged to said disks, holes or cavities in said sections, leaves hinged in said cavities, croze-grooves in the peripheries of the disks, central shafts supported in the tubular shafts, hubs on the inner ends of said central shafts, links connecting the hubs with the sections, in combina-



tion with a pressure-roller mounted on a shaft over said mandrel, blades on the roller adapted to mesh with the cavities in the mandrel, and cutting-blades on said roller, gears on the mandrel and pressure-roller meshing together, and means substantially as described for operating the mandrel and roller, as and for the purpose specified.

5 5. A collapsible mandrel consisting of disks, tubular shafts attached to said disks, curved and tapered body-sections hinged to said disks, holes or cavities in said sections, leaves hinged in said cavities, croze-grooves in the peripheries of the disks, central shafts supported in the tubular shafts, hubs on the inner ends of said central shafts, links connecting the hubs with the sections, in combination with a pressure-roller mounted on a shaft

over said mandrel, blades on the roller adapted to mesh with the cavities in the mandrel, 20 and cutting-blades on said roller, gears on the mandrel and pressure-roller, a cam-wheel mounted on the frame A, a swiveled head on end of central shaft, a pin on said head, a lever fulcrumed on the frame A, a sliding rod 25 supported in bearings in the base A connected with said lever, an arm on opposite end of said rod connected with the opposite central shaft, all constructed and adapted to operate substantially as described. 30

Signed by me at Cleveland, Ohio, this 30th day of December, 1901.

JOHN VAN DEVELDE.

Witnesses:

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